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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/696,535	10/29/2003	Michael George Azar	05516/147002	7821

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EXAMINER

DANG, HOANG C

ART UNIT PAPER NUMBER

3672

DATE MAILED: 08/11/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/696,535

Applicant(s)

AZAR, MICHAEL

Examiner

Hoang Dang

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 16 May 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,3-8,11-16,18-26,28-30 and 40-47 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,3-8,11-16,18-26,28-30 and 40-47 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 5/16/2006.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 1-47 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

All independent claims 1, 16, 18, 40 and 41 recite "at least a portion of the diamond-impregnated insert body and at least a portion of the thermally stable shearing portion form a leading edge of the insert, wherein the leading edge corresponds to the rotational direction of a drill bit." However, it is not exactly clear from the specification what is considered the leading edge of the insert that is formed by at least a portion of the diamond impregnated insert body and at least a portion of the thermally stable shearing portion. The drawings show several embodiments of the insert in figures 4A-7D. Applicant is required to point out what is considered the leading edge that is formed by at least a portion of the diamond-impregnated insert body and at least a portion of the thermally stable shearing portion in the insert of each of these embodiments (figs. 4A-7D). Is the leading edge a line or a surface? From where to where does the leading edge extend?

Claim Rejections - 35 USC § 102

3. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

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4. Claims 1, 11, 16, 18, 19, 28, 40-45 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by Dennis (US 6,315,066) (see figure 11A and column 8, line 60 through column 9, line 17).

Claim Rejections - 35 USC § 103

5. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

6. Claims 3, 4, 8, 23 and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dennis '066 in view of Fuller (4,919,220).

Dennis discloses the invention as claimed except for the bonding portion disposed between at least a portion of the diamond impregnated insert body and the thermally stable shearing portion. However, it is well known in the art that an insert body and a shearing portion can be formed separately then secured together by a bonding layer as evidenced by Fuller '220 (column 3, lines 47-51).

7. Claims 5, 6, 12, 13, 25, 26, 29 and 30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dennis '066 alone or Dennis '066 in view of Fuller '220 and further in view of Siever et al (US 5,279,374).

Dennis and Fuller do not disclose a coating on the insert body. Siever teaches a tungsten carbide layer on an insert body and a shearing portion of the insert (see Figure 3 and col. 2, lines 35-46). Siever teaches the coating step helps prevent the inserts from being lost before they fully wear out due to pockets wearing out before cones (col. 1, lines 37-42). As it would be advantageous to prevent the lost of inserts before they are fully worn, it would be obvious to one

of ordinary skill in the art at the time of the invention to modify the insert disclosed by Fuller to have a tungsten carbide coating as taught by Siever.

8. Claims 7 and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dennis '066 in view of Truax et al (US 2001/00478891).

Dennis discloses the invention as claimed except that the diamond-impregnated insert body is not disclosed as comprising thermally stable polycrystalline diamond. Truax teaches an insert with thermally stable polycrystalline diamonds that enhance shearing of the formation (paragraph 0028). As it would be advantageous to enhance shearing of the formation if the cutter element wears rapidly or fractures, it would be obvious to one of ordinary skill in the art at the time of the invention to modify the insert disclosed by Dennis to have thermally stable polycrystalline diamonds in view of the teachings of Truax.

5. Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Dennis '066 in view of Fuller '220 and Sung et al. 4,943,488.

Fuller discloses the insert body comprises natural diamond (col. 3, lines 60-61) but does not disclose the diamond is coated. Sung teaches coating diamond particle in diamond impregnated articles helps to improve the retention of the diamond particle in the supporting structure (col. 4, lines 64-67). As it would be advantageous to improve the retention of the diamond particle in the insert, it would be obvious to one of ordinary skill in the art to modify the insert disclosed by Dennis as modified by Fuller to have coated diamond particles in view of the teachings of Sung.

6. Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Dennis '066 in view of Fuller '220 and Sung et al 4,943,488 as applied to claim 14, and further in view of Garner '3,318,399.

Fuller, as modified, does not disclose the diamond is one carat. Garner teaches bit-using diamonds that are 1 carat in size when drilling is softer formations (col. 2, lines 42-46). As it would be advantageous to use have diamonds one carat in size when drilling softer formations, it would be obvious to one of ordinary skill in the art to further modify the insert disclosed by Fuller, as modified by Sung to have diamonds one carat in size in view of the teachings of Garner.

9. Claims 20-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dennis '066 in view of Caraway (US 6,193,000).

Dennis discloses the invention as claimed except that Dennis does not disclose the bit body is diamond impregnated tungsten carbide matrix. Caraway teaches that such bits are well known in the art (col. 4, lines 30-49). As one of ordinary skill in the art would be familiar with a bit body that is diamond impregnated tungsten carbide matrix, it would be obvious to one of ordinary skill in the art to modify bit disclose by Fuller to have a body that is diamond impregnated tungsten carbide matrix as taught by Caraway.

10. Claims 46 and 47 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dennis '066 in view of Garner '399.

Dennis does not disclose the diamond concentration and size depends on the abrasivity and compressive strength of the formation. Garner teaches a drill bit with larger and lower concentration of diamonds is better when drilling a softer formation and a drill bit with a smaller

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larger concentration of diamonds is better when drilling harder formations (col. 2, lines 43-50).

As it would be advantageous to use larger, smaller concentration of diamonds when drilling softer formations and smaller larger concentration of diamonds when drilling harder formations, it would be obvious to one of ordinary skill in the art to modify cutting element disclosed by Dennis to have the concentration and particle size of the diamonds depend upon the abrasivity and compressive strength of the formation in view of the teachings of Garner.

Referring to claim 47, Fuller does not disclose the diamond concentration is varied. Garner teaches a drill bit with larger and lower concentration of diamonds is better when drilling a softer formation and a drill bit with a smaller larger concentration.

Response to Arguments

11. Applicant's arguments with respect to claims 1, 4-8, 11-16, 18-26, 28-30, 40-47 have been considered but are moot in view of the new ground(s) of rejection.

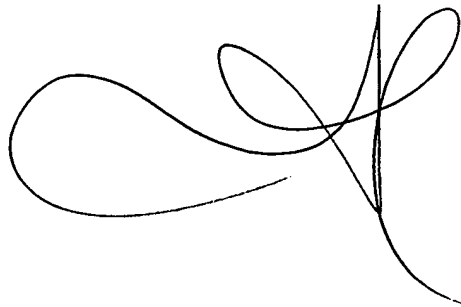
Conclusion

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hoang Dang whose telephone number is 571-272-7028. The examiner can normally be reached on 9:15-5:45 Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Bagnell can be reached on 571-272-6999. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Hoang Dang
Primary Examiner
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A handwritten signature in black ink, consisting of a large, stylized loop on the left and a series of smaller, overlapping loops on the right, ending in a long, sweeping tail.